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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/057,991	HANDELMAN, DORON
	Examiner	Art Unit
	Nathan Curs	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4,[illegible]/02,8/03,9/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. Due to the large number of references cited by the applicant, it would be helpful to the prosecution of the instant application if a statement of relevance were provided for each cited reference.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-9 and 13-15 are rejected under 35 U.S.C. 102(a) as being anticipated by Lee (US Patent No. 6288808).

Regarding claim 1, Lee discloses an optical packet switching method for switching inputted optical packets over NW wavelengths, where NW is an integer greater than one (fig. 3 element 23 and col. 3, line 66 to col. 4, line 3), the inputted optical packets comprising optical packets having different attributes of at least one packet characteristic (fig. 4, element lambda1.sub.1 to lambda.sub.n), the method comprising: grouping the NW wavelengths into KG groups of wavelengths (figs. 3 and 4 and col. 4, lines 26-60, where each output of the plurality of WDM-to-TDM Conversion Modules is a wavelength group) characterized in that each of the KG groups of wavelengths is allocated to optical packets distinguished from other optical packets by at least one attribute of said at least one packet characteristic, where KG is an integer greater than one (col. 3, lines 3-24 and fig. 5 and col. 4, lines 26-60, where the packets are

distinguished from other packets by assigned destination wavelength); and switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of attributes of said at least one packet characteristic (fig. 6 and col. 4, line 61 to col. 5, line 32).

Regarding claim 2, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on delay sensitivity (fig. 5 and col. 4, lines 26-60).

Regarding claim 3, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on optical packet bit-rate range (col. 4, lines 26-60, where cell period T indicates a bit rate range).

Regarding claim 4, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on optical packet carrier wavelength band (figs. 4 and 5 and col. 4, lines 26-60, where each wavelength from the plurality of wavelengths inherently indicates a wavelength band, the inherent spectral width of the wavelength).

Regarding claim 5, Sharony discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on optical packet carrier wavelength separation from other wavelengths (col. 3, lines 3-24 and col. 4, lines 26-60, where assigning packet destinations is based on assigning separate wavelengths to packets according to separate destinations).

Regarding claim 6, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on optical packet carrier

wavelength priority (col. 4, lines 26-60, where avoiding collision of packets assigned the same destination wavelength indicates equal priority for the packets).

Regarding claim 7, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on optical packet service level (col. 4, lines 26-60, where avoiding collision of packets assigned the same destination wavelength indicates equal service level for the packets).

Regarding claim 8, Lee discloses the method according to claim 1 and wherein said at least one packet characteristic comprises a characteristic based on a hierarchical combination of at least two of the following: delay sensitivity; optical packet bit-rate range; optical packet carrier wavelength band; optical packet carrier wavelength separation from other wavelengths; optical packet carrier wavelength priority; and optical packet service level (fig. 5 and col. 4, lines 26-60 and figs. 4 and 5 and col. 4, lines 26-60, where each wavelength from the plurality of wavelengths inherently indicates a wavelength band, the inherent spectral width of the wavelength, and where the delay sensitivity with respect to avoiding collision of packets is hierarchically combined with assigning a destination wavelength for a packet).

Regarding claim 9, Lee discloses the method according to claim 1 and wherein said transmission resource comprises at least one of the following: a queue of optical packets; a wavelength; a lightpath; and a polarization direction over a wavelength (figs. 4 and 5 and col. 4, lines 26-60).

Regarding claim 13, Lee discloses a wavelength allocation method for use in an optical packet switch to select from among NW wavelengths an output wavelength over which to output an optical packet, where NW is an integer greater than one (figs. 3 and 4 and col. 4, lines 26-60), the method comprising: grouping the NW wavelengths into KG groups of wavelengths (figs. 3 and 4 and col. 4, lines 26-60, where each output of the plurality of WDM-to-TDM Conversion

Modules is a wavelength group) characterized in that each of the KG groups of wavelengths is allocated to optical packets distinguished from other optical packets by at least one attribute of at least one packet characteristic, where KG is an integer greater than one (col. 3, lines 3-24 and fig. 5 and col. 4, lines 26-60, where the packets are distinguished from other packets by assigned destination wavelengths); finding one of the KG groups of wavelengths that matches said optical packet by correspondence of attributes of said at least one packet characteristic, and selecting, from among wavelengths in said one of the KG groups of wavelengths, a wavelength having an available transmission resource as the output wavelength (fig. 6 and col. 4, line 61 to col. 5, line 32).

Regarding claim 14, Lee discloses the method according to claim 13 and wherein said at least one packet characteristic comprises one of the following: a characteristic based on one of the following: delay sensitivity, optical packet bit-rate range, optical packet carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level; and a characteristic based on a hierarchical combination of at least two of the following: delay sensitivity, optical packet bit-rate range, optical packet carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level (e.g. delay sensitivity: fig. 5 and col. 4, lines 26-60; bit rate range: col. 4, lines 26-60, where cell period T indicates a bit rate range; optical packet carrier wavelength band: figs. 4 and 5 and col. 4, lines 26-60, where each wavelength from the plurality of wavelengths inherently indicates a wavelength band, the inherent spectral width of the wavelength).

Regarding claim 15, Lee discloses the method according to claim 13 and wherein said transmission resource comprises at least one of the following: a queue of optical packets; a

wavelength; a lightpath; and a polarization direction over a wavelength (figs. 4 and 5 and col. 4, lines 26-60).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10-12 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent No. 6288808).

Regarding claim 10, Lee discloses the method according to claim 1 and wherein said grouping comprises dynamically grouping the NW wavelengths into said KG groups of wavelengths based on changes in amounts of at least some of those of the inputted optical packets having said different attributes of said at least one packet characteristic. Lee doesn't explicitly discloses dynamically grouping the NW wavelength into said KG groups based on changes in destination of packets. However, Lee discloses that the switching mechanism is a router assigning (fig. 3) and that routed wavelength assignments correspond to destinations (col. 3., lines 3-24). It would have been obvious to one of ordinary skill in the art at the time of the invention that the wavelengths would be dynamically grouped and dynamically routed, to provide the advantage of changing routed wavelength assignments when packet destinations change.

Regarding claim 11, Lee discloses the method according to claim 10 and wherein said grouping comprises determining said changes prior to said dynamically grouping (col. 3., lines

3-24, where the dynamic grouping is a result of changes in packet destinations), and discloses a router for switching (fig. 3, element 25), but does not explicitly disclose at least one of the following: an optical network management system; and a switching/routing control unit of an optical packet switch. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the router of Lee would have a router control unit, since essentially all conventional optical routers have control units.

Regarding claim 12, Lee discloses the method according to claim 10 and wherein said dynamically grouping comprises dynamically changing at least one of the following: group size of at least two of the KG groups; and KG (col. 3, lines 3-24 and col. 4, lines 26-60, where the number of wavelengths in a wavelength group leaving a WDM-to-TDM Conversion Module will change based on the changing collision avoidance need, in light of changing packet destinations).

Regarding claim 16, Lee discloses an optical packet switch for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of at least one packet characteristic, where NW is an integer greater than one (fig. 3 element 23 and col. 3, line 66 to col. 4, line 3 and fig. 4, element lambda1.sub.1 to lambda.sub.n), the optical packet switch comprising: a switching fabric (fig. 3, element 25) for switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of KG groups of wavelengths, where KG is an integer greater than one (fig. 6 and col. 4, line 61 to col. 5, line 32), the KG groups of wavelengths are formed by grouping the NW wavelengths (figs. 3 and 4 and col. 4, lines 26-60, where each output of the plurality of WDM-to-TDM Conversion Modules is a wavelength group) and are characterized in that each of the KG groups of wavelengths is allocated to optical packets distinguished from other optical packets by at least one attribute of said at least one

packet characteristic (col. 3, lines 3-24 and fig. 5 and col. 4, lines 26-60, where the packets are distinguished from other packets by assigned destination wavelength), and said one of KG groups of wavelengths is matched to said one inputted optical packet by correspondence of attributes of said at least one packet characteristic (fig. 6 and col. 4, line 61 to col. 5, line 32). Lee discloses a router for switching (fig. 3, element 25), but does not explicitly disclose a switching/routing control unit operatively associated with the switching fabric and operative to control the switching fabric. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the router of Lee would have a router control unit associated with a network management system, since essentially all conventional optical routers have control units associated with network management systems.

Regarding claim 17, Lee discloses the optical packet switch according to claim 16 and wherein said switching/routing control unit is operative to determine said KG groups of wavelengths (fig. 5 and col. 4, lines 26-60) and to determine, for each said one inputted optical packet, the wavelength having the available transmission resource in said one of KG groups of wavelengths (fig. 6 and col. 4, line 61 to col. 5, line 32).

Regarding claim 18, Lee discloses the optical packet switch according to claim 16 and wherein said switching/routing control unit is operative to receive a determination of at least some of the KG groups of wavelengths from an optical network management system, and, based on said determination, to determine, for each said one inputted optical packet, the rest of the KG groups of wavelengths and the wavelength having the available transmission resource in said one of KG groups of wavelengths (figs. 3-6 and col. 4, line 26 to col. 5, line 32).

Regarding claim 19, Lee discloses the optical packet switch according to claim 16 and wherein said at least one packet characteristic comprises one of the following: a characteristic based on one of the following: delay sensitivity, optical packet bit-rate range, optical packet

carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level; and a characteristic based on a hierarchical combination of at least two of the following: delay sensitivity, optical packet bit-rate range, optical packet carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level (e.g. delay sensitivity: fig. 5 and col. 4, lines 26-60; bit rate range: col. 4, lines 26-60, where cell period T indicates a bit rate range; optical packet carrier wavelength band: figs. 4 and 5 and col. 4, lines 26-60, where each wavelength from the plurality of wavelengths inherently indicates a wavelength band, the inherent spectral width of the wavelength).

Regarding claim 20, Lee discloses the optical packet switch according to claim 16 and wherein said transmission resource comprises at least one of the following: a queue of optical packets; a wavelength; a lightpath; and a polarization direction over a wavelength (figs. 4 and 5 and col. 4, lines 26-60).

Regarding claim 21, Lee discloses a wavelength allocation apparatus for use in an optical packet switch to select from among NW wavelengths an output wavelength over which to output an optical packet, where NW is an integer greater than one (figs. 3 and 4 and col. 4, lines 26-60), the apparatus comprising: a processing unit operative to group the NW wavelengths into KG groups of wavelengths (figs. 3 and 4 and col. 4, lines 26-60, where each output of the plurality of WDM-to-TDM Conversion Modules is a wavelength group) characterized in that each of the KG groups of wavelengths is allocated to optical packets distinguished from other optical packets by at least one attribute of at least one packet characteristic, where KG is an integer greater than one (col. 3, lines 3-24 and fig. 5 and col. 4, lines 26-60, where the packets are distinguished from other packets by assigned destination wavelengths); and means operatively associated with the processing unit and operative to perform the following: find one of the KG

groups of wavelengths that matches said optical packet by correspondence of attributes of said at least one packet characteristic, and select, from among wavelengths in said one of the KG groups of wavelengths, a wavelength having an available transmission resource as the output wavelength (fig. 6 and col. 4, line 61 to col. 5, line 32). Lee discloses a router for switching (fig. 3, element 25), but does not explicitly disclose a switching/routing control unit operatively associated with the processing unit. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the router of Lee would have a router control unit, since essentially all conventional optical routers have control units.

Regarding claim 22, Lee discloses the apparatus according to claim 21 and wherein said at least one packet characteristic comprises one of the following: a characteristic based on one of the following: delay sensitivity, optical packet bit-rate range, optical packet carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level; and a characteristic based on a hierarchical combination of at least two of the following: delay sensitivity, optical packet bit-rate range, optical packet carrier wavelength band, optical packet carrier wavelength separation from other wavelengths, optical packet carrier wavelength priority, and optical packet service level (e.g. delay sensitivity: fig. 5 and col. 4, lines 26-60; bit rate range: col. 4, lines 26-60, where cell period T indicates a bit rate range; optical packet carrier wavelength band: figs. 4 and 5 and col. 4, lines 26-60, where each wavelength from the plurality of wavelengths inherently indicates a wavelength band, the inherent spectral width of the wavelength).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sharony et al. disclose wavelength switching based on spectral spacing to overcome crosstalk deficiencies.

7. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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